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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/588,007

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Naoto Hirotsaki

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EXAMINER

SCHINDLER, TRENT L

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/588,007	Applicant(s) HIROSAKI ET AL.	
	Examiner TRENT SCHINDLER	Art Unit 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/1/06</u> . | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Objections to the claims

1. Claim 5 is objected to because of the following informalities: Claim 5 recites "light emitting device of any claim 1." Examiner assumes Applicant means, "any light emitting device of claim 1." Appropriate correction is required.

Double patenting rejections

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claim 1 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7,253,446 B2 (hereinafter '446). Although the conflicting claims are not identical, they are not patentably distinct from each other because all the limitations of claim 1 of the present application are contained in claim 1 of '446, except for the limitation, "a support member formed with a depression for placing said semiconductor light emitting element therein, said depression having an inclined surface constituted as a visible wavelength light reflective surface; terminals configured to supply electric power to said semiconductor light emitting element." However, a person of ordinary skill would know that these are common features to semiconductor light-emitting devices. Therefore, claim 1 of the present application is not patentably distinct from claim 1 of '446.

Rejections under 35. U.S.C. §103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamaki et al. (US 2004/0135504 A1) in view of Ueda et al. (Abs. 2073, 206th meeting, The Electrochemical Society).

6. Regarding claims 1-2, Tamaki discloses a visible light emitting device, characterized in that said visible light emitting device includes at least:

- a semiconductor light emitting element configured to emit bluish purple or blue light (para. 4)
- a support member formed with a depression for placing said semiconductor light emitting element therein, said depression having an inclined surface constituted as a visible wavelength light reflective surface (Fig. 1)
- terminals configured to supply electric power to said semiconductor light emitting element (14)
- a phosphor configured to absorb a part or the whole of light emitted from said light emitting element, and to emit fluorescence at a wavelength different from that of the absorbed light, the phosphor including X% of a first fluorescent material configured to emit green, yellowish green, or yellow light (para. 55) and Y% of a second fluorescent material configured to emit yellowish red or red light (para. 20), at a mixing ratio meeting a condition of $0 \leq X < 100$, $0 < Y < 100$, and $0 < X + Y \leq 100$ (by definition)

but does not disclose said second fluorescent material comprising a CaAlSiN_3 crystal phase including, dissolved therein in a solid state, one kind or two or more kinds of element(s) selected from Mn, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu.

7. However, Ueda et al teach a fluorescent material comprising a CaAlSiN_3 crystal phase including, dissolved therein in a solid state, Eu, in order to create a stable and efficient red phosphor.

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8. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the phosphor of Ueda in the device of Tamaki, since this would provide a stable and efficient red phosphor.

9. Regarding claim 3, Tamaki in view of Ueda discloses the device of claim 1, and the modified Tamaki further discloses said semiconductor light emitting element is a blue light emitting diode having a main emission wavelength of 380 nm to 485 nm (para. 70 of Tamaki), said first fluorescent material is a phosphor powder having a main emission wavelength of 495 nm to 585 nm (para. 110 of Tamaki), said second fluorescent material is a phosphor powder having a main emission wavelength of 585 nm to 780 nm (Ueda), and said phosphor powders are mixed, dispersed in a resin, and mounted to cover said blue light emitting diode element (para. 294 of Tamaki).

10. Claims 4-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Ellens et al. (US 2003/0030368 A1).

11. Regarding claim 4, Ellens discloses a lighting apparatus characterized in that:

- said lighting apparatus includes three or more light source units, each light source unit including at least one light emitting device (Fig. 2)
- said light emitting device including at least: a semiconductor light emitting element configured to emit bluish purple or blue light (para. 13)
- a support member formed with a depression for placing said semiconductor light emitting element therein, said depression having an inclined surface constituted as a visible wavelength light reflective surface (Fig. 1)
- terminals configured to supply electric power to said semiconductor light emitting element (14)
- a phosphor configured to absorb a part or the whole of light emitted from said light emitting element, and to emit fluorescence at a wavelength different from that of the absorbed light, the phosphor including at least one of a first fluorescent material configured to emit green, yellowish

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green, or yellow light, and a second fluorescent material configured to emit yellowish red or red light (para. 14)

but does not disclose each of said light source units or each of said light emitting device having a mixing ratio of said first fluorescent material to said second fluorescent material, which mixing ratio is different from those of the other light source units or other light emitting devices, in a manner that different light emission colors are visible, site by site of said lighting apparatus.

12. However, a person of ordinary skill would know that changing the mixing ratio of the phosphors would change the color of the light source units or each of said light-emitting devices, thereby creating various lighting effects. It would therefore have been obvious to a person of ordinary skill in the art at the time the invention was made to vary the mixing ratio of the phosphors of the light source units or each of said light-emitting devices, since this would allow the creation of various light effects.

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ellens in view of Tamaki as modified by Ueda and applied to claim 1.

14. Ellens as applied to claim 5 discloses the lighting apparatus of claim 5, but does not disclose the light-emitting device of claim 1 being used as the light-emitting device of claim 5. However, a person of ordinary skill in the art would recognize that any light-emitting device as described in claim 5 would be suitable for use in such a lighting apparatus. It would therefore have been obvious to a person of ordinary skill in the art at the time the invention was made use the modified device of Tamaki in the apparatus of claim 5, since this is simply a matter of design choice.

15. Regarding claim 6, Ellens in view of Tamaki as modified by Ueda discloses the device of claim 5, and Tamaki further teaches each light source unit optically connected with a light guiding member (15) including a scattering element (para. 398). Motivation to combine references is the same as that of claim 5.

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16. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ellens in view of Tamaki as modified by Ueda, further in view of Wang (US 2002/0084745 A1).

17. Ellens in view of Tamaki as modified by Ueda discloses the device of claim 6, and further discloses the light-guiding member made of transparent resin (para. 398), but does not disclose that the scattering element comprises air bubbles, or that said light-guiding member is a rod-like member.

18. However, Wang teaches the use of air bubbles as scatterers in a scattering member of an LED, since air bubbles are known to promote the scattering of light (para. 28).

19. It would have been obvious to person of ordinary skill in the art at the time the invention was made to use air bubbles as scatterers in the scattering element, since it is known that bubbles promote scattering of light.

20. A person of ordinary skill in the art would further understand that the light guiding member could be any of an arbitrary number of shapes, depending on the ultimate purpose of the device. It would therefore have been obvious to a person of ordinary skill in the art at the time the invention was made to make the light guiding member rod-like, since this would simply be a matter of design choice.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gotoh et al. (US 7,138,756 B2), Nagatomi et al., (US 2006/0017365 A1), and Nagatomi et al. (US 2006/0006782) relate to a phosphor, LED, and light source.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TRENT SCHINDLER whose telephone number is (571)270-3321. The examiner can normally be reached on Monday through Thursday, 7:30 am to 5:00 pm ET.

23. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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24. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Trent Schindler/
Examiner, 2879

/Nimeshkumar Patel/

Supervisory Patent Examiner, Art Unit 2879